

Research Letter

Asymptomatic torsion of a gravid uterus

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Rotation of the uterus is common during pregnancy. In two-thirds of cases, there is a physiologic dextrorotation of the uterus, probably due to its rightward shift during pregnancy [1]. The rotation is commonly less than 45 degrees. Uterus rotation of more than 45 degrees is classified as pathologic, but is scarcely seen in practice. We report an asymptomatic case of uterine torsion and review the cases that have been reported to date.

In December 2011, a 38-year-old woman (gravida 4, para 2, and abortus 1) presented at the Prenatal Care Unit of Shahid Akbarabadi Hospital (Tehran, Iran). She was at the 34th week of gestation and had pregnancy-induced hypertension that had started 2 weeks previously (her systolic blood pressure was 170 mmHg). Her first pregnancy had led to a normal vaginal delivery 11 years earlier. However, her second and third pregnancies failed due to intrauterine death (at the 32nd week of gestation) and abortion (at the 8th week of gestation).

Ultrasound showed a singleton fetus with normal status. On examination, the maternal vital signs were stable, but systolic/diastolic blood pressure was 150/108 mmHg and her pulse rate was 86 beats per minute. On abdominal examination, the fetus was found in a longitudinal lie and cephalic presentation. Since there was no uterus contraction, vaginal examination was not performed. There was no vaginal blood or fluid loss. Using a Sonicaid, the fetal heart rate was determined as 140 beats per minute.

The patient was admitted to the labor ward for her pregnancy-induced hypertension. According to the routine protocol of Shahid Akbarabadi Hospital, laboratory tests related to pre-eclampsia including blood urea nitrogen, creatinine, aspartate aminotransferase, alanine aminotransferase, uric acid, hemoglobin, hematocrit, prothrombin time, partial thromboplastin time, and blood sugar measurements were conducted (Table 1). Urine analysis and a 24-hour urine test were also ordered and a fetal non-stress

test was carried out. An intramuscular injection of 12 mg long-acting betamethasone was performed and repeated after 24 hours.

In addition, 4 g intravenous magnesium sulfate 20% was initially injected using a micro set. Afterwards, intramuscular magnesium sulfate 50% with 1 mL lidocaine was injected. The injections were repeated every 4 hours until the sixth dose.

The blood pressure of the patient varied between 125/80 mmHg and 145/100 mmHg during her stay in the labor ward. Although a 24-hour urine collection was ordered, it was halted after fetal bradycardia (about 80 beats per minute) was noted with decreasing beat-to-beat variability. Due to a presumptive diagnosis of fetal distress, the patient, whose blood pressure was 140/100 mmHg, consented to the procedure. She was thus taken to the operating room while injections of magnesium sulfate continued. An emergency cesarean section was performed under spinal anesthesia. A Pfannenstiel incision was made, the lower uterine segment was exposed, and an inverted T incision was made. There were no unusual findings at this point of the surgery. A male 1650 g infant was delivered by external cephalic version. Apgar scores were 7 and 8 at the 1st and 5th minutes, respectively. When the small placenta was removed manually, a concealed placental abruption was observed behind the placenta. It was subsequently investigated for pathology identification.

After delivery, we found a spontaneous uterine torsion of at least 180 degrees in the clockwise direction. Therefore, an incision was made at the posterior uterine wall. The uterine incision in endometrium, myometrium, and perimetrium was closed with chromic catguts number 2.0, 1.0, and 0, respectively. The abdomen was repaired after establishing complete hemostasis and counting the pads. The patient was then transferred to the recovery room. The infant was transferred to the neonatal intensive care unit (NICU) because of low birth weight and fetal distress.

The result of placental pathology was normal. After 2 hours, the patient's blood pressure was 160/110 mmHg. Therefore, 5 mg of intravenous hydralazine was injected every

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Table 1
Blood test results and urine analysis.

Parameter	Value	Unit	Reference value
Blood urea nitrogen	12	mg/dL	5–23
Creatinine	0.8	mg/dL	0.5–1.5
Aspartate aminotransferase	31	IU/L	5–40
Alanine aminotransferase	37	IU/L	5–40
Uric acid	344 ^a	mg/dL	2.3–6.1
Hemoglobin	14.2	mg/dL	12–16
Hematocrit	43.5	%	36–46
Prothrombin time	13	s	12–14
Partial thromboplastin time	37	s	30–45
Blood sugar	78	mg/dL	70–140
Urine analysis	Protein 1+		

^a High.

20 minutes until three doses and the patient was transferred to the intensive care unit (ICU) where she received the sixth dose of magnesium sulfate. After becoming stable, the patient was transferred to the postnatal ward. Two days later, the patient's blood pressure was 110/80 mmHg and she was discharged on the 3rd postoperative day. The infant was in the NICU for 2 days, but was discharged home after 2 weeks in good condition.

Torsion of the uterus is more prevalent among animals. A review of the literature revealed that the earliest report of this case had been carried out by an Italian veterinarian in 1662. Approximately 200 years later in 1863, the first human case was detected in postmortem examinations and was reported by Virchow [2]. However, it was in 1876 when Labbé actually published the first case of uterine torsion in a human [3,4]. With only 47 reports of uterine torsion from 1985 to 2006, the complications are known to be rare [5].

While the etiological factors are not clearly known, some studies have identified abnormal or pathological conditions in the uterus or adjacent structures as the possible predisposing factors (Table 2). In spite of the fact that these factors enhance uterine torsion risk, 16% of the cases, including the one in the current report, occurred without any predisposing factor.

Different degrees and durations of torsion result in various symptoms in which, according to Jensen et al, include maternal shock, abdominal pain, obstructed labor, vaginal bleeding, intestinal or urinary complaints, and hypertonic uterus [1]. Surprisingly, our case of uterine torsion did not present any of the aforementioned symptoms and was in fact asymptomatic.

In two-thirds of the cases, as well as the case of the present report, clockwise rotation was observed [6]. While in the

majority of patients, including ours, a 180-degree uterine torsion was detected, torsions of greater than 180 degrees were noticed in 9% of the cases [1].

Torsion of the uterus can be dangerous in many ways. For instance, Luk et al found that it may progress and disturb the blood flow of the uterus or adnexae. They also proposed maternal and fetal mortality as probable outcomes [7].

In previous case reports, the prognosis of uterine torsion was found to depend upon pregnancy stage and rotation degree. The highest rates of maternal mortality happen during the 20th to 24th weeks of gestation (17%). The rates would however decrease as gestational age increases. Despite the rare cases of death (only 1 since 1960) [1], uterine torsions of 180–360 degrees increase maternal and neonatal mortality rates to as high as 36% and 71%, respectively.¹ Luckily in our case, the patient had no complications and the mother and her infant were both in good condition. Similar to the report of Kovavisarach and Vanitchanon, our patient had a placental abruption, but unlike their case, our fetal outcome was good [8].

Due to the nonspecific clinical manifestation of uterine torsion and possible asymptomatic cases [9], it is usually difficult to make a correct preoperative diagnosis. Differential diagnosis including pelvic tumor torsion, appendicitis, uterine rupture, fibroid degeneration, placental abruption, and abdominal pregnancy should thus be taken into account [7]. Uterine torsion may be diagnosed by means of computed tomography (CT) and magnetic resonance imaging (MRI). The presence of gas in the uterine cavity on plain radiographs and CT scans has been identified as one of the characteristics of uterine torsion [10]. MRI is also considered a good option since its superior soft-tissue contrast resolution facilitates precise assessment of pelvic organs and evaluation of changes in the upper vaginal wall (which changes from the normal H configuration to an X-shaped configuration in uterine torsions) [7].

When a case of uterine torsion is diagnosed before delivery, a cesarean section is required to terminate the pregnancy. According to the literature, a posterior low transverse incision would be needed to deliver the infant in such conditions [11], which is in turn accompanied by a risk of damage to the uterine vessels as well as the urethras. Some studies have recommended implementing vertical incision in the posterior upper segment as a safer approach. However, the impacts of such incision on future deliveries are unclear [12,13]. Therefore, the position of the uterus has to be corrected prior to making an incision in the posterior part of the uterus.

Although uterine torsion is a rare obstetric event, it has nonspecific symptoms and may result in severe complications. Timely and accurate preoperative diagnosis of uterus torsion

Table 2
Risk factors of uterine torsion.

Maternal causes	Uterine causes	Uterine fibroids, mullerian anomalies, bicornuate uteri, and large neoplasms distorting the uterine shape or position
	Pelvic causes	Pelvic adhesions and peristaltic movements of the sigmoid
	Ovarian causes	Adnexal masses and ovarian cysts
Fetal causes		Abnormal fetal presentation such as transverse lie

and immediate surgery are of utmost importance to save both the mother and the baby. Moreover, in order to avoid serious vascular injuries, the uterus needs to be assessed for rotations before making any incision during a cesarean section.

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